Red palm oil: nutritional, physiological and therapeutic roles in improving human wellbeing and quality of life

O. O. OGUNTIBEJU, A. J. ESTERHUYSE and E. J. TRUTER
Oxidative Stress Research Centre, Department of Biomedical Sciences, Faculty of Health & Wellness Sciences, Cape Peninsula University of Technology, Bellville, South Africa

Accepted: 23 July 2009

ABSTRACT

The link between dietary fats and cardiovascular disease has created a growing interest in dietary red palm oil research. Also, the link between nutrition and health, oxidative stress and the severity or progression of disease has stimulated further interest in the potential role of red palm oil (a natural antioxidant product) to improve oxidative status by reducing oxidative stress in patients with cardiovascular disease, cancer and other chronic diseases. In spite of its level of saturated fatty acid content (50%), red palm oil has not been found to promote atherosclerosis and/or arterial thrombosis. This is probably due to the ratio of its saturated fatty acid to unsaturated fatty acid content and its high concentration of antioxidants such as β-carotene, tocotrienols, tocopherols and vitamin E. It has also been reported that the consumption of red palm oil reduces the level of endogenous cholesterol, and this seems to be due to the presence of the tocotrienols and the peculiar isomeric position of its fatty acids. The benefits of red palm oil to health include a reduction in the risk of arterial thrombosis and/or atherosclerosis, inhibition of endogenous cholesterol biosynthesis, platelet aggregation, a reduction in oxidative stress and a reduction in blood pressure. It has also been shown that dietary red palm oil, taken in moderation in animals and humans, promotes the efficient utilisation of nutrients, activates hepatic drug metabolising enzymes, facilitates the haemoglobinisation of red blood cells and improves immune function. This review provides a comprehensive overview of the nutritional, physiological and biochemical roles of red palm oil in improving wellbeing and quality of life.

KEY WORDS: Antioxidants.
Cardiovascular diseases.
Chemopreventive agent.
Dietary supplements.
Red palm oil.

Introduction

Red palm oil is an edible natural oil produced from the fruit of the *Elaeis guineensis* tree, which is known to have been part of the human diet for over 5000 years and is seen as a nutritious food and a valuable medicine.[1,2] It derives its colour from carotenes such as β-carotene and lycopene, the same nutrients that give tomatoes, carrots and other fruits and vegetables their rich red and orange colours.

It is the second most widely produced edible oil, with over 28 million tonnes produced globally in 2004. It also serves as an important component of soaps, washing powders and personal care products and has also been reported to be useful in treating wounds.[3]

For many years, the inhabitants of West African countries have recognised and used red palm oil as a cooking oil. It is reported that European merchants trading with West African countries purchased red palm oil for use in Europe. Historical reports indicate that in the Asante Confederacy, state-owned slaves built large plantations of palm oil trees, while in the Kingdom of Dahomey, King Ghezo passed a law in 1856 forbidding his citizens from cutting down palm oil trees. It was appreciated by the pharaohs of ancient Egypt as a sacred food.

It is also known that red palm oil was regarded as a highly valuable product by British traders for use as an industrial lubricant during Britain's industrial revolution, and also in the manufacture of basic soap products. By 1870, palm oil constituted the primary export product of West African countries such as Ghana and Nigeria.

It is believed to have originated from tropical Africa; however, it has now spread to most parts of the world. In many countries it is cheaper than other edible oils and has the additional benefit of being an important source of vitamin A in vitamin A-deficient or marginally deficient communities.[2,3]

The link between dietary fats and cardiovascular diseases has stimulated growing interest in dietary red palm oil research. The link between nutrition and health in oxidative stress has created further interest in red palm oil and its potential ability to improve oxidative status by reducing it in patients with cardiovascular disease, cancer and other chronic diseases. However, it is important to note that too high an intake of red palm oil could induce liver toxicity and liver damage characterised by increased alanine transaminase (ALT) and asparate transaminase (AST) activities. Interestingly, consumption of moderate amounts

Correspondence to: Dr O. O. Oguntibeju
Email: bejufemi@yahoo.co.uk or oguntibejuo@cput.ac.za